

REMARKS

As a preliminary matter, Applicant appreciates the Examiner's indication that Claim 6 has been allowed.

As an additional preliminary matter, Applicant respectfully requests entry of this after-final amendment because no new issues are raised by the proposed amendment to Claim 3. More specifically, independent Claim 3 has been amended to include the subject matter of now-cancelled associated dependent Claim 5. Accordingly, the subject matter of amended Claim 3 was previously considered when examining Claims 3 and 5. Accordingly, no new issues are raised by the proposed claim amendment. Thus, entry of this after final amendment is proper, and such entry is respectfully requested.

Claim 3 stands objected to due to informalities. More specifically, the Examiner asserted that it is unclear how the linear light sources can be located above the substrate but below the reflection plate.

In response, the Examiner's attention is directed to Figure 7 and to the description of this figure on page 16 (lines 3-6) of the Specification, which refers back to the details of reflection plate 2 of Figures 2 and 3. In other words, Figure 7 is merely a schematic drawing in which the reflection plate 2 of either Figure 2 or Figure 3 may be used.

As clearly shown in Figures 2 and 3, the linear light sources 3 are located above substrate 4, but below the reflection plate 2. Accordingly, as Applicant believes that this issue with regard to Claim 3 has been clarified, Applicant respectfully requests the withdrawal of this objection to Claim 3.

Claims 1 and 8 stand rejected under 35 U.S.C. §103 as being unpatentable over United States Patent No. 6,789,921 to Deloy et al. in view of United States Patent No. 6,439,731 to Johnson et al. Applicant respectfully traverses this rejection.

Applicant respectfully submits that the cited references fail to disclose or suggest all of the features of the present invention. More specifically, neither the Deloy et al. reference nor the Johnson et al. reference, alone or in combination, disclose or suggest a surface lighting device that includes, *inter alia*, linear light sources including light emitting elements with non-light-emitting portions and a reflection plate with a plurality of through-holes wherein the "non-light-emitting portions of the light emitting elements are covered by the reflection plate," as defined in independent Claims 1 and 8.

One example of an embodiment of the invention defined in independent Claims 1 and 8 is shown in Applicant's Figure 3, which includes a reflection plate 2 with a plurality of through-holes through which the light emitting portions of light emitting elements 3 can be fit. Figure 3 also shows how the non-light-emitting portions of light emitting element 3 are covered by reflection plate 2.

Applicant respectfully submits that the Deloy et al. reference fails to disclose or suggest that the non-light-emitting portions of the light emitting elements are covered by the reflection plate, as recited in independent Claims 1 and 8. More specifically, Figure 4 of the Deloy et al. reference does not show enough detail to disclose or suggest that LEDs 303 include non-light-emitting portions that are covered by reflector 314. Moreover, the other figures of Deloy et al. do not disclose or suggest this feature, nor does the written description.

Similarly, the Johnson et al. reference also fails to disclose or suggest this feature. More specifically, Figure 2 of the Johnson et al. reference also lacks the necessary detail to disclose or suggest that the non-light-emitting-portions of the lights of illumination source 12 are covered by a reflection plate. The written description of the Johnson et al. reference also fails to disclose or suggest this feature.

Accordingly, as all of the features defined in independent Claims 1 and 8 are not disclosed or suggested in Deloy et al. and Johnson et al., alone or in combination, Applicant respectfully requests the withdrawal of this §103 rejection.

Claims 3 and 5 stand rejected under 35 U.S.C. §103 as being unpatentable over United States Patent No. 6,325,524 to Weber et al. in view of Johnson et al. Claim 5 has been cancelled, without prejudice, in favor of incorporating the subject matter of this claim into associated independent Claim 3. Accordingly, the rejection of Claim 5 has been rendered moot. However, with respect to Claim 3, Applicant respectfully traverses this rejection.

Applicant respectfully submits that the cited references fail to disclose or suggest all of the features of the claimed invention. More specifically, neither the Weber et al. reference nor the Johnson et al. reference disclose or suggest a surface lighting device wherein "the interval for setting the linear light sources corresponding to one color is a fixed value L and an interval between the diffusion plate and a plane on which the linear light sources are set is a fixed value H, the irradiation angle, at which an amount of light of the linear light sources is maximized, is set such that a relation of $L \leq 2 \times H \times \tan(\text{irradiation angle})$

angle at which an amount of light of the linear light sources is maximized) is satisfied," as recited in amended independent Claim 3.

In the Final Office Action of February 2, 2007, the Examiner asserted that "Because the references teach the structure of the claimed surface lighting device, the references would also teach that the interval L, the interval H, and the irradiation angle such that a relation of $L \leq 2 \times H \times \tan$ (irradiation angle at which an amount of light of the linear light sources is maximized) is satisfied." *See* Final Office Action of February 2, 2007, page 4, lines 19-22. However, even assuming *arguendo* that the cited references did disclose the claimed diffusion plate and the light emitting elements that include three primary colors of light, arranged in series and arranged in a predetermined order at a fixed interval, there is no disclosure or suggestion of the claimed relationship between the pitch of the light sources of one color, the distance between the diffusion plate and the plane on which the light sources are located and the irradiation angle of the maximum amount of light.

Applicant's Figure 10 shows one example of the parameters defined in Claim 3. More specifically, Figure 10 shows parameter L, which is the interval for setting the linear light sources corresponding to one color, and parameter H, which is the distance between the diffusion plate 1 and a plane 4 on which the linear light sources are set. Using the values L and H, and the maximum light emitting angle of LED element, if the claimed relationship ($L \leq 2 \times H \times \tan$ (irradiation angle at which an amount of light of the linear light sources is maximized)) is satisfied, Applicant has found that a fixed amount of light is obtained immediately below the diffusion plate, and color unevenness is reduced.

The cited references fail to disclose or suggest that any of the claimed parameters are important, and thus they also fail to disclose or suggest the claimed relationship between the values L, H and the maximum light emitting angle. Accordingly, as all of the features of Claim 3 are not disclosed or suggested in the cited references, Applicant respectfully requests the withdrawal of this §103 rejection of Claim 3 under the combination of Weber et al. and Johnson et al.

Claims 4 and 7 stand rejected under 35 U.S.C. §103 as being unpatentable over Johnson et al. in view of United States Patent No. 6,679,621 to West et al. Applicant respectfully traverses this rejection.

Applicant respectfully submits that one of ordinary skill in the art would not have been motivated to modify the device of the Johnson et al. reference in light of the West et al. reference in the manner suggested by the Examiner. In the Office Action, the Examiner correctly acknowledged that the Johnson et al. reference fails to teach the light irradiation angle correcting means. Accordingly, the Examiner asserted that it would have been obvious to have included lens 44 with refractive portion 56 (such as in Figure 5A of West et al.) on each light source 12 of Johnson et al. However, Applicant once again respectfully submits that one of ordinary skill in the art would not have added a lens, such as lens 44 of Figure 5A of West et al., to each light source of Johnson et al. because the device of Johnson et al. is a backlight LCD in which the light sources emit light *perpendicular* to their substrate, while the lens of West et al. directs light *parallel* to a substrate. More specifically, as can be seen in Figure 2 of Johnson et al., light sources 12 direct light perpendicular to PCB substrate 10,

towards diffuser panel 20 and LCD panel 18. In contrast, as can be seen in, for example, Figures 5E, 5F and 5g of West et al., the lenses of West et al. direct light sideways, i.e., parallel to the substrate upon which they are attached. Thus, applying the lenses of West et al. to the device of Johnson et al. would redirect essentially all of the light sideways, parallel to PCB 10, and thus the device of Johnson et al. would not operate properly because the light would not reach diffuser panel 20 and LCD panel 18. Accordingly, since one of ordinary skill in the art would not have been motivated to modify the device of Johnson et al. in view of West et al. in the manner suggested by the Examiner, Applicant respectfully requests the withdrawal of this §103 rejection of independent Claims 4 and 7.

In response to the argument of the previous paragraph, the Examiner responded by citing case law discussing what qualifies as analogous art. *See* February 2, 2007 Final Office Action, page 7(line 20) through page 8 (line 3). However, Applicant has not argued that the West et al. reference is non-analogous art with respect to the Johnson et al. reference. Instead, Applicant's argument is that one of ordinary skill in the art would not have been motivated to make the modifications suggested by the Examiner because the references teach directing light in two different, mutually exclusive, directions. More specifically, Johnson et al. requires the light to be emitted *perpendicular* to the substrate, while the lens of West et al. directs the light *parallel* to the substrate. The Examiner has not provided a reason why one of ordinary skill in the art would add a component to Johnson et al. that directs light away from the direction intended in Johnson et al.

The Examiner also argued that Figure 12 of West et al. includes a reflector to direct light perpendicular to the substrate. *See* February 2, 2007 Final Office Action, page 8 (lines 3-5). However, Applicant respectfully submits that one of ordinary skill in the art would not be motivated to add a lens whose main purpose is to change the direction of light from perpendicular to the substrate to parallel to the substrate, which lens then requires the addition of another component for directing light perpendicular to the substrate again. Such a combination is not logical because the purpose of the lens (changing the direction of the light to parallel) is lost when adding the reflector. Instead, Applicant respectfully submits that the lens of West et al. would not have been added to Johnson et al. in the first place. Accordingly, for at least these reasons, Applicant respectfully requests the withdrawal of this §103 rejection of Claims 4 and 7.

Further, Applicant also separately traverses this §103 rejection as applied to independent Claim 7 because the cited references fail to disclose or suggest the claimed light irradiation angle correcting means in which “a maximum irradiation angle of the light-emitting elements is corrected such that a point where a maximum irradiation direction of the light-emitting elements, which is corrected by the light irradiation angle correcting means in the light-emitting portions or on the light-emitting portions of the light-emitting elements constituting the linear light source of attention, and the diffusion plate cross with each other goes beyond a middle point of the linear light source adjacent to the linear light source of attention,” as defined in independent Claim 7.

One example of an embodiment of the invention defined in independent Claim 7 is shown in Applicant's Figure 15. As shown in the bottom portion of Figure 15, the point E, which is the point where the maximum irradiation direction of element A and the diffusion plate 1 cross, goes beyond a middle point C of the linear light source B and the linear light source of attention (light source A). In other words, the light irradiation angle correcting means corrects the light rays so that point E, which is the intersection of the maximum irradiation direction and plate 1, is located on the opposite side of a center line (C) between the light source at issue (A) and an adjacent light source (B).

In contrast, neither Johnson et al. nor West et al. disclose or suggest this feature. The Johnson et al. reference fails to specifically disclose the maximum irradiation direction. In West et al., there is no disclosure of the relationship between the rays of one light source and an adjacent light source, so there is no disclosure of the specifically claimed feature of having the maximum irradiation direction of one light source cross with the diffusion plate at a point that is past the middle point between the one light source and an adjacent light source.

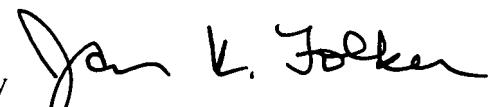
In response to arguments similar to those made above, the Examiner referred to Figure 12 of West et al. *See* February 2, 2007 Final Office Action, page 8 (lines 6-11). However, Figure 12 of West et al. only includes a single light source 40. Thus, Figure 12 fails to show a light source of attention and another light source that is adjacent to the light source of attention. Accordingly, this figure does not include a "middle point of the linear light source adjacent to the linear light source of attention." Further, Figure 12, and the

written description in West et al., fail to disclose or suggest which of the light rays shown constitutes the maximum irradiation direction. Accordingly, none of the features recited in the last six lines of Claim 7 are disclosed or suggested in West et al. Thus, for these reasons also, Applicant respectfully requests the withdrawal of this §103 rejection of Claim 7.

For all of the above reasons, Applicant requests reconsideration and allowance of the claimed invention. Should the Examiner be of the opinion that a telephone conference would aid in the prosecution of the application, or that outstanding issues exist, the Examiner is invited to contact the undersigned attorney.

Respectfully submitted,

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